



## ARL is an Authority on Nutrition and the Science of Balancing Body Chemistry Through Hair Tissue Mineral Analysis!

Hair Tissue Mineral Analysis


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# Immune System

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## Mineral Analysis and the Immune System

Hair analysis and nutritional balancing science can help assess and improve the activity of the immune system. These may be used to help enhance energy levels, correct mineral deficiencies, eliminate toxic metals and balance the oxidation rate.

### Energy And The Immune System

As with all body systems, the immune system is dependent upon the amount of available biochemical or adaptive energy. Low energy is one cause of immune system dysfunction. Energy production in the body is dependent upon at least two basic mechanisms:

1. the energy pathway or the steps involved in converting food to ATP and
2. the metabolic or oxidation rate. The term 'oxidation rate' was coined by Dr. George Watson, a researcher at UCLA. It is similar to the metabolic rate which is an older term.

To use an analogy with a combustion engine, the energy pathway is similar to the steps the fuel takes getting from the tank to its final combustion in the engine. A blockage anywhere along this pathway will reduce power output. The oxidation rate is similar to the RPM of an engine, or the efficiency of the engine. All biochemical reactions in the body have optimum reaction rates. The rate will vary depending upon one's activity level, but excessive deviation from the optimum rate will reduce energy output.

Hair analysis may reveal blockages in the energy pathway. Many minerals are required for ATP production in the body. Deficiencies of magnesium, potassium, zinc, manganese, chromium and other minerals will impair energy production. Also, toxic metals detectable on the test interfere with energy production. They replace vital minerals in enzyme binding sites, impairing the functioning of the enzymes

Hair mineral analysis may also be used to assess the oxidation rate. Dr. Paul Eck discovered that the balance of the electrolytes (calcium, magnesium, sodium and potassium) can provide us with this information. Both the levels of these minerals and the ratios between them are important.

### Measuring Energy Efficiency

Dr. George Watson used blood pH and carbon dioxide levels to determine oxidation rate. This provided a minute-by-minute assessment however, it can change depending upon the time of day, recent meals or other factors.

Dr. Paul Eck found the calcium/potassium ratio and the sodium/magnesium ratio in an unwashed sample of hair may be used to determine the average oxidation rate over a period of a few months. When the oxidation rate is excessively fast or slow, the efficiency of energy production decreases dramatically.

The calcium/magnesium ratio and sodium/potassium ratio are also energy indicators. Imbalanced ratios will decrease energy efficiency.

At times, all these ratios may be within normal limits however, the individual levels of the electrolytes are all elevated. This indicates an unstable condition and usually the presence of toxic metals, whether or not they are revealed on the test. This condition is referred to as "four high electrolytes".

If the ratios are good, but all four of the electrolytes are low, a chronic fatigue condition is indicated. This is explained in more detail in other newsletters and articles on this website.

### The Sodium/Potassium Ratio

This is the single most important ratio to assess the immune system. When it is low it is called an inversion. The low ratio indicates immune system weakness. It also indicates chronic adrenal weakness, fatigue and tissue catabolism. A loss of potassium from damaged cells causes the higher potassium reading in relation to sodium.

The sodium/potassium ratio is considered the most important ratio on the test. If there are numerous imbalances on the mineral analysis, it is best to focus on correcting this one first.

### Copper And Zinc Metabolism

Zinc is essential for the immune system and copper imbalance impairs the immune system. Copper is needed for aerobic metabolism. The mineral itself is a fungicide and anti-bacterial. Disturbance of copper metabolism favors anaerobic metabolism, used by bacteria and fungi. During an infection, the body normally sequesters iron in the liver and releases more copper into circulation to help fight the infection.

Copper imbalance is very common. At times the imbalance is obvious from the test. At other times it is hidden.

### Other Toxic Metals

Cadmium, mercury, lead and iron toxicity can impair the immune system by interfering with vital biological functions. Removal of these toxic metals through a nutritional balancing program will enhance immune system activity.

### Enhancing The Supplement Program

The nutritional balancing supplement program assists in strengthening the immune system. For acute and chronic infections, supplements that may be added to the regular program include additional manganese, zinc, copper, vitamin A and vitamin C. Herbs that are helpful include lomatium, astragalus, echinacea, golden seal and therapeutic mushrooms. Colloidal silver is also helpful for many infectious conditions.

Plenty of rest, fresh air, deep breathing and a sensible diet can be of great help for any infection. Any other therapies that balance body energies or otherwise reduce stress on the body may also be very beneficial.

An emotional imbalance can also place great strain on the immune system. Meditation, inspirational reading and resolving unhealthy emotional conditions will also enhance immune system activity.

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